AMENDMENT TO THE SPECIFICATION:

Page 1, replace the paragraph beginning at line 10, with the following paragraph:

The present invention relates in general to the engineering of nanometer-scale structures and, in particular, to the repair and fabrication of masks used for lithography. Applications include the semiconductor industry.

Page 3, replace the paragraph beginning at line 21, with the following paragraph:

Microchips are most commonly commercially produced using optical lithography, a process in which a photosensitive resist is spun on the substrate to pattern and then selectively exposed by UV light through a photomask or reticle. The need for more sophisticated, faster and denser devices has reduced the minimum feature size the microchips (the critical dimension, CD) by a 0.7 factor every three years – a model known as Moore's Law ["International Roadmap for Semiconductors (Lithography)", International SEMATEC, 2000]. The minimum feature size and spacing in the photomasks used to fabricate them has shrunk proportionally. However, photomask feature dimensions are currently approaching their theoretical physical limit. Quantum effects such as tunneling and particle-wave interference effects can become important for device performance as shrinking continues to nanometer scales. Photomasks are thus increasingly precise, complex (with the addition of ~~optical phase correction~~ optical proximity correction (OPC) and the use of techniques such as phase shifting and off-axis illumination, OAI and therefore increasingly expensive, for example, typically above $50,000 per unit for alternating phase shift masks. A different photomask is required for each lithography exposure, in other words for each layer in the microchip. More than a dozen mask may be required for some designs. Lithography thus represents one of the largest fixed costs associated with chip production (typically, approx. 1/3 of the total). The total cost for a 90-nm mask can be about one million dollars.

Page 4, replace the paragraph beginning at line 14, with the following paragraph:

Currently used photomask repair processes are either extremely expensive, limited, or not well adapted to advanced mask technologies. The most commonly used tool, focused ion bam (FIB), which is capable of etching opaque defects and filling clear ones with carbon or metal deposits [see, for example, Tao et al., U.S. Patent No. 5,104,684, 1992], and may cost

above $5M per unit (see e.g. Veeco FEI commercial instruments). While this technology can work for COG (Chromium on glass), despite poor edge placement accuracy, repair technologies based on gallium staining are known to damage the areas surrounding the defect in attenuating phase shifting masks. Laser ablation and laser-assisted deposition is also used [see for example Balz et al., U.S. patent No. ~~5,441,386~~ 5,441,836, 1995 and references therein] [Segal et al., U.S. Patent No. 4,200,668 1980] [Chiba et al., Japanese Journal of Applied Physics part 1 38 (12A): 6577-6582, 1999 and references therein].